

*Promachus* (?) *bicolor*, sp. n.

Long. corp. 55-57 mm.

*Male*.—Rufous; the antennæ, spines, a broad band down the middle of the body, bisected by the rufous carina, an interrupted lateral line, and the legs beyond the apical fourth of the femora black or blackish. Head with two pairs of spines near the back; pronotum deeply sulcated before the middle, with a pair of long spines on the front lobe and small lateral ones at the front angles, and two pairs of spines (the first longest) on the second lobe. Mesonotum with five pairs of spines (the last pair approximating) on the central region, and a row of six spines on each side on the lateral black line; metanotum, median segment, and several of the basal segments of the abdomen with a pair of central spines, diminishing in size hindwards; there are also two strong lateral spines on the metanotum and two on the meso- and metapleuræ. Segments of the abdomen hardly twice as long as broad; hind legs rather longer than the others, extending as far as the extremity of the seventh segment of the abdomen.

*Female* (?).—Larger and stouter; testaceous, mottled with blackish; the spines arranged nearly as in the male; legs shorter, stouter, and carinated; hind femora extending rather beyond the fifth segment of the abdomen; abdomen with a sinuous carina on the sides of the segments, segment 10 tripartite at the extremity; except the front lobe of the pronotum, the whole median line of the thorax and abdomen is traversed by a very strong raised carina. Abdomen without terminal spine; operculum not projecting beyond the last segment.

*Hab.* Tonkin (Than Moi), June and July (*Fruhstorfer*).

XLIII.—On the Genus *Ortmannia*, Rathb., and the Mutations of certain *Atyids*. By E. L. BOUVIER\*.

THE shrimps of the family *Atyidæ* belong exclusively to fresh water. Despite their adaptation to this special medium and the strange aspect of their most typical forms, they attach themselves by a series of genera to the most primitive of the marine shrimps. From *Xiphocaris*, of which the chelæ are normal and are furnished with exopodites on all the feet, one passes to *Atyephyra*, in which the exopodites have disappeared on the three posterior pairs of feet, to *Caridina*, which have no exopodites and whose anterior

\* Translated from the 'Comptes Rendus,' t. cxxxviii. p. 446.

chelæ are alone modified, then to *Ortmannia*, M. Rathbun (*Atyoida*, Ortmann), in which the modifications take place in the chelæ of the first two pairs of feet, and at last one comes to the terminal forms of the family, the *Atyæ*, of which the very curious chelæ are split right down to the base and in consequence are devoid of a palmar region. Further, in the genus *Atya* itself it is possible to establish a series of species which progressively depart from *Ortmannia*. By its small size and its rostrum, subtriangular and toothed below, *A. serrata* presents some resemblance to *Ortmannia mexicana*, Sauss. (*O. potimirim*, F. Müller), whilst *A. gabonensis*, Giebel, *A. robusta*, A. Milne-Edwards, and many other forms stand out at first sight by their very marked adaptive characters: large size, rostrum laterally serrated, feet of the third pair singularly strong and robust, &c.

It appears that *Ortmannia* is separated from all species of *Atya* by two very constant characters: on the one hand, the form of the chelæ, which are normal, with a relatively short mobile digit and a well-differentiated palmar region; on the other, the development of the carpus, which is longer than wide, at least in the feet of the second pair. These two characters are of the first importance; they bring together *Ortmannia*, *Caridina*, and *Atyæphyra*, whilst they separate them considerably from the *Atyæ*.

In studying the *Atyidæ* in the collection of the Museum, a batch of shrimps, collected at Honolulu by M. Ballieu, particularly attracted my attention. These shrimps were *Atyidæ* of small size, all adult, and in other respects very much alike; but some presented all the characters of *Atya bisulcata*, Sp. Bate, whilst others belonged very clearly to the genus *Ortmannia*.

In 1901, Miss Mary Rathbun made an analogous observation on the *Atyidæ* collected on the Sandwich Islands by Mr. Henshaw; she grouped in the species of Sp. Bate all the examples with short carpi and chelæ split down to the base; the others she regarded as types of a new *Ortmannia*, *O. Henshawi*. I found myself confronted by the same forms, but I was led to regard them quite differently from Miss Rathbun.

Setting aside the generic characters affecting the carpi and chelæ, these two forms resemble one another in all respects: same structure of rostrum, antennæ, buccal appendages, same tegumentary ornaments, everywhere the most absolute identity—somewhat strange in species belonging to different generic types. More than this, the two forms have that similarity of appearance which characterizes all the representatives of a single species, and which, in the deter-

mination of species, is a more rapid and sometimes a surer guide than the examination of morphological characters. In my opinion, *Ortmannia Henshawi* is neither more nor less than a form of *Atya bisulcata*, a form which has the curious character of recalling the immediate ancestral form of *Atya*. We have not here to deal with an ordinary dimorphism, sexual, produced by season or locality: the specimens of *M. Ballieu* were collected in the month of May, 1877, in the vicinity of Honolulu, perhaps with one stroke of the net; in both forms there are the same variations of size and sex. Some females of *Atya bisulcata* are charged with ova, whilst the females of the *Henshawi* variation have none; but in another consignment, also made by *M. Ballieu*, the females of this variation carry a remarkably large charge of ova.

I should not perhaps have hazarded the foregoing conclusion if the Museum material had not permitted me to extend it to other quarters of the globe.

In 1890, *M. Alluaud* collected in a torrent on the Amber Mountain, in Madagascar, a small shrimp which presented all the characters of the genus *Ortmannia*, but differed from the modification *Henshawi* by specific characters; latterly the Museum has received from Sainte Marie, in Madagascar, a small batch of shrimps\*, in which examples of *Atya* and *Ortmannia* absolutely resembling one another (setting aside generic characters) were mixed. The specimens of the first form appeared to me to be classifiable as *Atya serrata*, Sp. Bate: those of the second resembled that from the Amber Mountain; they have all the specific characters of *Atya serrata*, and represent certainly, in my opinion, a modification of this species. This will be, if desired, the modification *Alluaudi* of *A. serrata*.

*A. serrata* exists also in the island of Bourbon, where Maillard, about 1854, obtained three specimens, which are now in the Museum. The modification *Alluaudi* of this species was found, in 1893, by *M. Alluaud* in the ravines of the mountains of Salasie and Helbour. Another specimen was taken by *M. Alluaud*, in 1890, in Mauritius; the typical *A. serrata* has not yet been noted in this island, but one cannot doubt its existence there as well as in Réunion.

These modifications are of great interest, because they put in evidence one of the mechanisms by which new types are produced and definitely established through more primitive types which may persist or disappear.

\* These shrimps were captured in a little rivulet near Sainte Marie in October 1895, and were presented to the Museum by *M. Edouard Chevreux*.

In face of these modifications, one cannot doubt but that the *Atyæ* are the direct descendants of *Ortmannia*, and that, in the case of certain species, this derivation is not yet a definitely accomplished fact. It is naturally among the small forms, nearer than any others to the primitive *Atyidæ*, that this condition of unstable equilibrium is seen still to exist, in which the same creature may indifferently present the form of the past or of the future: *Atya bisulcata* and *Atya serrata* are still in this stage. In *Ortmannia americana* the primitive form alone exists; either it has persisted after having produced the *Atya*, or it is in a state of evolution towards the production of this kind, which is more probable. In *Atya brevifrons*, de Man, on the contrary, the primitive form seems to have disappeared, bequeathing a very marked stamp to its descendant, which is small like the *Ortmannia* and provided as it is with locomotor feet of small power. *A. brevifrons* is a common species in the islands of the Pacific; it has never been noticed under the form *Ortmannia*, but it is possible that in some island it persists still in that state.

It goes without saying that in the most typical *Atyæ* (*A. robusta*, *A. scabra*, &c.), which are greatly modified and of large size, one would not expect to find specimens having the *Ortmannia* form.

Here, then, manifestly are *mutations by atavism* which show us how new types are formed and old types persist. Actually, *Atya bisulcata* and *A. serrata* are represented by individuals of two kinds—the one with chelæ split down to the base, the other with normal chelæ. If these species were social, the individuals of each type might be called upon to play a different rôle in the colony, and to a certainty the characters which distinguish them would go on exaggerating themselves in consequence.

May we not explain in the same way the mysterious presence of polymorphic individuals in the societies of ants and termites? and the starting-point of the polymorphism of these forms, would it not be an atavic mutation similar to that of the *Atyæ*?

I return to the domain of pure systematics. The genus *Ortmannia* should persist, but it comprises up to the present time, it appears, only a single independent species—*O. mexicana*, of Tropical America. The modification *Henshawi* of *Atya bisulcata* and the modification *Alluaudi* of *Atya serrata* are clearly *Ortmannia*; but they represent species in course of evolution, which, according to circumstances, may persist or disappear as *Ortmannia*; it is useful to look upon them no longer as independent species, but as the atavic form of the

species of *Atya* which issued from it. It is easy to verify upon the spot the exactness of the views expressed in this note. Those who do not accept them may always regard the two modifications described above as distinct species of *Ortmannia* \*.

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XLIV.—Notes on a new Species of *Acis*. By W. D. HENDERSON, M.A., B.Sc., Zoological Laboratory, the University, Aberdeen.

WHILE working along with Prof. J. Arthur Thomson over a collection of Indian-Ocean Alcyonarians I recognized the new species here described. It was included in a collection made by Prof. W. A. Herdman in Ceylon.

The colony is large and fan-shaped, rising to a height of 149 mm. and having a maximum width of 167 mm.

From a conical base, which has a flat spreading margin and is attached to a mass of worm-tubes, the short main stem arises. At a distance of 14 mm. from its origin, where it has a diameter of 3.5 mm., it divides into two principal branches.

The branching is for the most part confined to one plane, but several of the smaller branches and twigs arise at right angles to the principal plane of branching. The branching is very profuse and at several points shows anastomosis of the branches, but this is by no means common. The branches are cylindrical, but there are traces of slight flattening in the plane of branching. The twigs arise usually at right angles to the branches, and their tips as well as those of the branches are slightly clavate.

The polyps are small and are scattered over the whole surface of the stem and branches. In no place can it be said that they are confined to three surfaces, nor can any attempt at lateral arrangement be seen. The verrucæ are very small and the polyps can be completely retracted within them. The edges of the verrucæ show a variable number of spines which project above the slightly conical operculum formed by the tentacular spicules when the polyps are withdrawn.

The superficial cœnenchyma of the stem and the branches presents a striking appearance, due to the arrangement of the large flat whitish spicules and to their being outlined against the darker ground-colour of the stem and branches.

The spicules of the general cœnenchyma are flat and multi-tuberculate, varying very much in size and shape. The

\* M. Ortmann regards *Atya bisulcata*, Spence Bate, as an *Ortmannia* (*Atyoida*), although the examples studied by the English author had the true *Atyan* chelæ; I may add that M. Ortmann does not appear to have observed the curious variations of this species.